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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,713	08/11/2005	Louis Fouarge	F-858 (31223.00075)	8448
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EXAMINER				
CHEUNG, WILLIAM K				
ART UNIT		PAPER NUMBER		
1796				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/528,713

Applicant(s)

FOUARGE ET AL.

Examiner

WILLIAM K. CHEUNG

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-30, 34-36 and 38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-30, 34-36 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. In view of the amendment filed April 1, 2008, claims 1-16, 31-33, 37 have been cancelled, and new claim 38 has been added. Claims 17-30, 34-36, 38 are pending.
2. In view of the cancellation of claims 31-33, the rejection of Claims 31-33 under 35 U.S.C. 112, second paragraph, is withdrawn.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 38 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In light of MPEP 2173.05(i), any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph as failing to comply with the written description requirement. Since applicants' original disclosure does not have any basis for the negative limitation

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"without the aid of a pump disposed within the bypass line" as claimed in claim 38, the rejection set forth under 35 U.S.C. 112, first paragraph is proper.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 17-30, 34-36, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rouzier et al. (US 3,595,846) for the reasons adequately set forth from paragraph 9 of the office action of December 4, 2007.

36. (Currently Amended) A method of forming polyolefins comprising:
supplying ethylene monomer in a carrier liquid to a reactor system comprising at least one loop reactor;
circulating the ethylene through the loop reactor in the presence of a catalyst system to form a slurry of polymer fluff particles in the carrier liquid;
altering the flow of at least a portion of the slurry by at least one of:
flowing a portion of the slurry through a bypass line extending from one location of the loop reactor to another location of the same loop reactor;
operating a circulating pump and circulating the slurry through the loop reactor at an efficiency of from 30-75% of a pump capacity; or
providing a plurality of obstacles in a flow path of the slurry within the loop reactor; and
while continuing the introduction of the carrier liquid and ethylene monomer into the loop reactor, withdrawing a portion of the slurry from the loop reactor as a polymer product.

Rouzier et al. (Figure 1; col. 1, line 23-30) disclose a polymerization process for ethylene (col. 3, line 29) in the presence of heptane and catalyst (col. 6, line 49), where the monomer can be feed through line 31 of the reactor. Rouzier et al. (col. 3, line 51-55; col. 6, line 46-50) clearly disclose a polymerization process involving the circulation of monomers in a slurry of polymer (fluff) partitioned off by movable separators (or the obstacles as claimed). Regarding the claimed "flowing a portion of the slurry through a bypass line extending from one location of the loop reactor to another location of the same loop reactor", Rouzier et al. (Figure 1; col. 6, line 51-55) disclose "flowing a portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor. Regarding the claimed "withdrawing a portion of the slurry from the loop reactor as a polymer product", Rouzier et al. (Figure 1; col. 7, line 6-8) disclose that portion of the slurry can be drawn off by

The difference between the invention of claims 17-30, 34-36, 38 and Rouzier et al. is that Rouzier et al. do not disclose "circulating the slurry through the loop reactor at an efficiency of from 30-75% of a pump capacity".

However, Rouzier et al. in Figure 1 clearly disclose the use of pumps (item 36, 39, 42). Although Rouzier et al. do not disclose "circulating the slurry through the loop reactor at an efficiency of from 30-75% of a pump capacity", it would not be difficult to one of ordinary skill in art to recognize that the pump for circulating the polymer slurry should be run at a safe range or capacity within the capability of a pump to avoid equipment failure. Motivated by the expectation of success of developing a polymerization process for polymerizing ethylene, it would have been obvious to circulate the slurry at an efficiency that is not too low or too high capacity relative to the maximum capacity of a pump to obtain the a range that fully encompasses the 30-75% of a pump capacity feature as claimed.

Regarding the difference between the invention of claims 17-30, 34-36, 38 and Rouzier et al. that Rouzier et al. do not disclose the amount to be bypassed, applicants must recognize that Rouzier et al. in Figure 1 clearly disclose "flowing a portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor". Therefore, generically, the examiner has a reasonable basis to believe that the amount as claimed in claims 18, 19, 26, 27 is included in the amount as taught in Rouzier et al. Motivated by the expectation of success of developing the process of Rouzier et al., it would have been obvious to one of ordinary skill in art to apply "routine experimental design" to obtain the amount feature

of claims 18, 19, 26, 27. To obtain a valid patent, applicants should submit comparative data to show the criticality of the claimed amount to be bypassed of claims 18, 19, 26, 27.

Regarding the difference between the invention of claims 20-22 and Rouzier et al. that Rouzier et al. do not disclose the angle between the bypass line and the loop reactor, applicants must recognize that Rouzier et al. in Figure 1 clearly disclose "flowing a portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor". Although diagrammatically, the angle is between the bypass line and the loop reactor is at 90 degree. However, the examiner believes that the said angle should not be restricted by Figure 1 because it is merely a technically drawing describing a concept. However, the examiner has a reasonable basis to believe that the angle as claimed in claims 20-22 is generically taught in Figure 1 Rouzier et al. Motivated by the expectation of success of developing the process of Rouzier et al., it would have been obvious to one of ordinary skill in art to apply "routine experimental design" to obtain the angle feature of claims 20-22. To obtain a valid patent, applicants should submit comparative data to show the criticality of the claimed angles of claims 20-22.

Regarding the difference between the invention of claims 23, 24 and Rouzier et al. that Rouzier et al. do not disclose ratio DB/DL range as claimed, applicants must recognize that Rouzier et al. in Figure 1 clearly disclose "flowing a portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor". Since the bypass line is for pumping a

portion of the slurry to be recirculated, it would not be difficult for one of ordinary skill in art to recognize that the bypass line is not required to be same diameter of the loop reactor or to have the same capacity of the loop reactor. Therefore, motivated by the expectation of success of developing the process of Rouzier et al., it would have been obvious to one of ordinary skill to employ a DB/DL ratio of less than 1 to obtain the invention of claims 23, 24. To obtain a valid patent, applicants should submit comparative data to show the criticality of the claimed range of DB/DL ratio of claims 23, 24.

Regarding the difference between the invention of claims 25-28 and Rouzier et al. that Rouzier et al. do not disclose that the recirculation of the slurry from the pressure side of the impeller blades of said pump to the suction side of the impeller blades of said pump, applicants must first recognize that Rouzier et al. in Figure 1 clearly disclose "flowing a portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor". Further, applicants must recognize that it is well known in the art that the pumps for this particular application are typically performed with pumps having impeller blades. While the impellers are in action for recirculating the said slurry, the action creates a suction side and pressure side. Further, on the pressure side, the slurry is being pumped to the other side of the loop reactor to be recirculated. Portion of the recirculated slurry will be drawn to the suction side of the loop reactor.

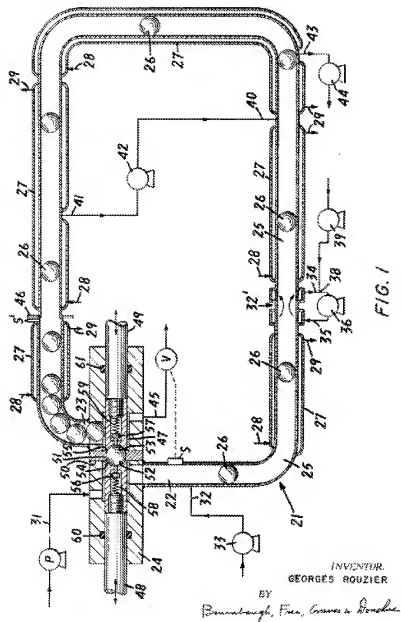
Regarding the difference between the invention of claims 26, 27, and Rouzier et al. that Rouzier et al. do not disclose the percent of the portion of the slurry to be

recirculated, applicants must recognize that Rouzier et al. in Figure 1 clearly disclose "flowing a portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor". Therefore, generically, the examiner has a reasonable basis to believe that the percent of the portion of the slurry to be recirculated as claimed in claims 26, 27 is included in the percent as taught in Rouzier et al. Motivated by the expectation of success of developing the process of Rouzier et al., it would have been obvious to one of ordinary skill in art to apply "routine experimental design" to obtain the percent feature of claims 26, 27. To obtain a valid patent, applicants should submit comparative data to show the criticality of the claimed percent to be bypassed of claims 26, 27.

7. Claims 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rouzier et al. (US 3,595,846), in view of Weinreich et al. (US 3,093,482) for the reasons adequately set forth from paragraph 10 of the office action of December 4, 2007.

Rouzier et al. (Figure 1; col. 1, line 23-30) disclose a polymerization process for ethylene (col. 3, line 29) in the presence of heptane and catalyst (col. 6, line 49), where the monomer can be feed through line 31 of the reactor. Rouzier et al. (col. 3, line 51-55; col. 6, line 46-50) clearly disclose a polymerization process involving the circulation of monomers in a slurry of polymer (fluff) partitioned off by movable separators (or the obstacles as claimed). Regarding the claimed "flowing a portion of the slurry through a bypass line extending from one location of the loop reactor to another location of the same loop reactor", Rouzier et al. (Figure 1; col. 6, line 51-55) disclose "flowing a

portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor. Regarding the claimed "withdrawing a portion of the slurry from the loop reactor as a polymer product", Rouzier et al. (Figure 1; col. 7, line 6-8) disclose that portion of the slurry can be drawn off by means of a pump through line 43. For circulating the slurry, Figure 1 of Rouzier et al. clearly disclose the use of pumps (item 36, 39, 42).



The difference between the invention of claims 29-30 and Rouzier et al. is that Rouzier et al. do not disclose “circulating the slurry through the loop reactor at an efficiency of from 30-75% of a pump capacity”.

However, Rouzier et al. in Figure 1 clearly disclose the use of pumps (item 36, 39, 42). Although Rouzier et al. do not disclose "circulating the slurry through the loop reactor at an efficiency of from 30-75% of a pump capacity", it would not be difficult to one of ordinary skill in art to recognize that the pump for circulating the polymer slurry should be run at a safe range or capacity within the capability of a pump to avoid equipment failure. Motivated by the expectation of success of developing a polymerization process for polymerizing ethylene, it would have been obvious to circulate the slurry at an efficiency that is not too low or too high capacity relative to the maximum capacity of a pump to obtain the a range that fully encompasses the 30-75% of a pump capacity feature as claimed.

Regarding the difference between the invention of claims 29-30 and Rouzier et al. that Rouzier et al. do not disclose that the recirculation of the slurry from the pressure side of the impeller blades of said pump to the suction side of the impeller blades of said pump, applicants must first recognize that Rouzier et al. in Figure 1 clearly disclose "flowing a portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor". Further, applicants must recognize that it is well know in the art that the pumps for this particular application are typical performed with pumps having impeller blades. While the impellers are in action for recirculating the said slurry, the action creates a suction side and pressure side. Further, on the pressure side, the slurry is being pumped to the other side of the loop reactor to be recirculated. Portion of the recirculated slurry will be drawn to the suction side of the loop reactor.

Further, the difference between the invention of claims 29-30 and Rouzier et al. is that Rouzier et al. do not disclose perforated impeller blade.

Weinreich et al. (Figures 1-4; col. 3, line 1-10, line 26-34) disclose the use of perforated impeller blades to achieve violently agitation for mixing the contents that are being impelled. Motivated by the expectation of success of achieving better mixing, it would have been obvious to one of ordinary skill in art to incorporate perforated impeller blades, or impeller blades possessing holes within the blades, to obtain the invention of claims 29-30.

Regarding the claimed "total surface of the area of the holes in said impeller blades within a range of the total surface area of said blades", applicants must first recognize that Weinreich et al. (Figures 1-4; col. 3, line 1-10, line 26-34) clearly disclose perforated impeller blades for achieving violently agitation. Motivated by the expectation of achieving different level of violet mixing, it would have been obvious to one of ordinary skill in art to use "routine process optimization method" to vary the amount or the size of the holes in the perforated impeller blades to achieve different level of violet agitation to obtain the invention of claims 29-30. In view of the 112 rejection set forth for the recited "empty space", the examiner has a reasonable basis that the rationale set forth for the rejection of claims 29-30 is adequate. Anyway, in view of the substantially identical type of perforated impeller blade for impelling a slurry comprising a polymer, the examiner also has a reasonable basis to believe that the claimed "empty space" is also inherently possessed by the working mechanism of the perforated impeller blades of Weinreich et al.

Regarding claim 38 which recites "without the aid of a pump disposed within the bypass line", in view of MPEP 2144.04, if the mixing function is longer needed in a process taught, it would have been obvious to one of ordinary skill in art to remove the pump as taught in Rouzier et al. to obtain the invention of claim 38. In view of the 112 rejection set forth, the rationale for the instant rejection is adequate.

MPEP 2144.04: Omission of an Element and Its Function Is Obvious if the Function of the Element Is Not Desired

Ex parte Wu , 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989) (Claims at issue were directed to a method for inhibiting corrosion on metal surfaces using a composition consisting of epoxy resin, petroleum sulfonate, and hydrocarbon diluent. The claims were rejected over a primary reference which disclosed an anticorrosion composition of epoxy resin, hydrocarbon diluent, and polybasic acid salts wherein said salts were taught to be beneficial when employed in a freshwater environment, in view of secondary references which clearly suggested the addition of petroleum sulfonate to corrosion inhibiting compositions. The Board affirmed the rejection, holding that it would have been obvious to omit the polybasic acid salts of the primary reference where the function attributed to such salt is not desired or required, such as in compositions for providing corrosion resistance in environments which do not encounter fresh water.). See also In re Larson, 340 F.2d 965, 144 USPQ 347 (CCPA 1965) (Omission of additional framework and axle which served to increase the cargo carrying capacity of prior art mobile fluid carrying unit would have been obvious if this feature was not desired.); and In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (deleting a prior art switch member and thereby eliminating its function was an obvious expedient).

Response to Arguments

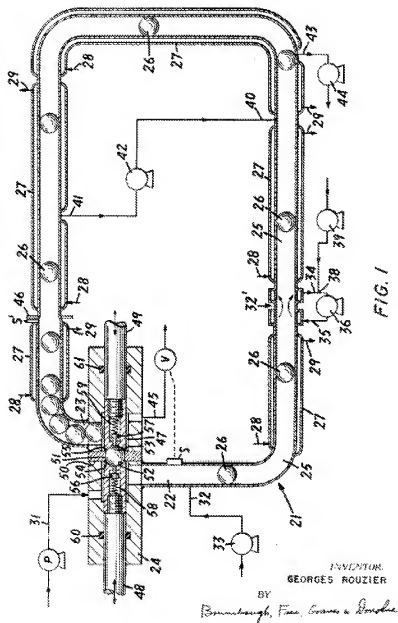
8. Applicant's arguments filed April 1, 2008 have been fully considered but they are not persuasive. Applicants argue that the bypass line of Rouzier et al. is not part of the loop reactor disclosed. However, applicants do not provide any reasons or evidence to support the allegation that the bypass line is not part of the loop reactor disclosed. Nevertheless, since Rouzier et al. (Figure 1) clearly teach a loop reactor comprising the bypass line 40 to 41, the examiner has a reasonable that Rouzier et al. clearly teach reactor as claimed.

Regarding applicants' argument that the bypass line as claimed does not require a pump, applicants fail to recognize that the claims other than claim 38, do not exclude a bypass line comprising a pump. Therefore, applicants' argument is not supported by claims 17-30, 34-36.

Regarding applicants' argument that the process as taught in Rouzier et al. does not relate to a slurry process because the working examples disclosed in Rouzier et al. only relate to process comprising a solvent, applicants fail to recognize that the teachings of Rouzier et al. are not limited to its preferable embodiment. Applicants must recognize that Rouzier et al. (col. 2, line 23-30) clearly disclose polymerization and copolymerization of olefins and diolefins that are typically polymerized in the presence of a solvent to form slurry of polymers. Further, Rouzier et al. (col. 3, line 26-36) clearly indicate that the disclosed polymerization processes include polymerized products in the form of suspension and emulsion (a different form of slurry). Therefore, after reading the polymerization process teachings of Rouzier et al., it would not be difficult to one of

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ordinary skill in art to recognize and appreciate a polymerization process involving a slurry such as a suspension or an emulsion.



Regarding applicants' argument that the teachings of Weinreich et al. are no more pertinent to applicants' disclosure than the primary references cited, applicants must recognize that Weinreich et al. (Figures 1-4; col. 3, line 1-10, line 26-34) clearly disclose perforated impeller blades which are very similar to the perforated impeller blades as claimed for achieving violently agitation. Motivated by the expectation of achieving different level of violet mixing, it would have been obvious to one of ordinary skill in art to use "routine process optimization method" to vary the amount or the size of the holes in the perforated impeller blades to achieve different level of violet agitation to obtain the invention of claims 29-30.

Applicants must first recognize that Rouzier et al. in Figure 1 clearly disclose "flowing a portion of the slurry through a bypass line (item 41) through a pump (item 42) through line (item 40) to another location of the same loop reactor". Further, applicants must recognize that it is well know in the art that the pumps for this particular application are typical performed with pumps having impeller blades. Therefore, both Rouzier et al. and Weinreich et al. relate substantially identical endeavors of using a pump and its impeller blades for achieving better mixing. In view of the reasons set forth above, the combined teachings of Rouzier et al. and Weinreich et al. are proper for the instant 103 rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K. Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William K Cheung/
Primary Examiner, Art Unit 1796

William K. Cheung, Ph. D.

Primary Examiner

July 9, 2008